

## **ANSWERS: Crystal Ball Organic reaction flow charts**

1 a) i) Compound A: butan-1,2 diol

Compound B: 1,2-dibromobutane

ii) Reaction 1: warm with aqueous sulfuric acid

Reaction 4: react with HBr

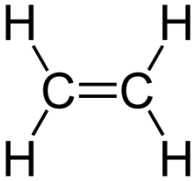
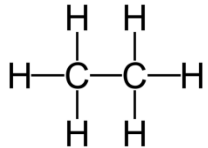
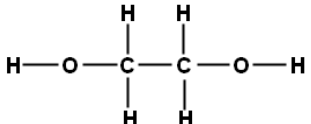
iii) Reaction 1: Hydrolysis

Reaction 2: Oxidation

Reaction 3: Bromination

Reaction 4: Addition

2)

Compound A: ethene  <i>We know that compound A is ethene because of the clue in the question re complete combustion with oxygen requiring 3 moles of oxygen gas</i>  $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$	
Compound B: ethane	
Compound C: ethane-1,2-diol	

3)

Compound letter	name	reagents required to produce it
A	ethanoic acid	1 <sup>st</sup> : warm with aqueous H <sub>2</sub> SO <sub>4</sub> to produce ethanol 2 <sup>nd</sup> : oxidise ethanol using acidified KMnO <sub>4</sub> or K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>
B	1-chloroethene	
C	ethane-1,2,diol	oxidise with acidified KMnO <sub>4</sub>
D	polythene	high temperature and high pressure using a catalyst
E	ethanol	warm with aqueous H <sub>2</sub> SO <sub>4</sub> to produce ethanol
F	1,2-dichloroethane	react with Cl <sub>2</sub>

Compound B forms polyvinyl chloride (PVC)

